6.6 Gamma Source Transport Procedure

COUPP owns two gamma sources stored in the source locker near the 60T heavy water tank, a 0.1 mCi Co-60 source and a 1mCi Ba-133 source. To transport or use these sources, one **MUST** be a SNOLAB approved user of these sources. The purpose of this proceedure is to minimize the radiation exposure of workers using these sources.

At a walking pace of 1m/s, it takes 5 minutes to carry the sources from the 60T tank area to the COUPP experiment in Drift J. Workers will be subjected to increased radiation exposure when in close proximity to these sources during transportation.

In a scenario where these sources are carried inside a 1" lead pig adjacent to the lower torso, or 10cm away from sensitive organs, an exposure rate of approximately 33μSv/hr is possible from the Co-60 source, or 0.04μSv/hr from the Ba-133 source. With this, one would receive a day's worth of radiation exposure from the shielded Co-60 source within 20 minutes.

To avoid unnessesary radiation exposure, **a cart, tray, or pail is to be employed when carrying the COUPP gamma sources so as to maintain at least 30cm between the sources and sensitive organs.** This will reduce radiation exposure to less than 7.1 μSv/hr, or 1.3 μSv per return trip for Co-60. Additionally, given the mass of a 1" thick pig to be 7kg, the cart will prevent the source and pig from being dropped.

While the Ba-133 source presents little risk of radiation exposure when in it's shield, it shall also be carried in this manner in case it is confused with the Co-60 source.